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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/087,090	03/01/2002	James M. Kates	22645-7201	2988

7590 08/03/2005

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EXAMINER

NI, SUHAN

ART UNIT	PAPER NUMBER
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2646

DATE MAILED: 08/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Supplemental
Notice of Allowability**

Application No.

10/087,090

Examiner

Suhan Ni

Applicant(s)

KATES, JAMES M.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the telephonic interview made 7/27/2005.
2. ☒ The allowed claim(s) is/are 55 and 64-66.
3. ☒ The drawings filed on 03/01/02 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

Suhan Ni
Primary Examiner
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Office Action

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in the telephonic interview with Mr. Michael J. Bolan on 07/27/2005.
3. The application has been amended as follows:

In the claims:

Please **cancel claims 1-3**, and

Please **add new claims 64-66**:

64. A hearing aid for correcting a hearing impairment of a user, comprising: an input signal channel having a microphone and providing digital input signals; a plurality of cascaded all-pass filters, wherein said digital input signals pass through said plurality of cascaded all-pass filters, and wherein said plurality of cascaded all-pass filters output a sequence of delayed samples; means for applying a frequency domain transform on said sequence of delayed samples, wherein a warped sequence results from said frequency domain transform applying means; means for calculating a plurality of frequency domain level estimates from said warped sequence; means for calculating a plurality of frequency domain gain coefficients from said plurality of frequency domain level estimates; means for calculating a plurality of spectral

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enhancement gain coefficients from said warped sequence; means for calculating a plurality of compression-spectral enhancement gain coefficients from said plurality of frequency domain gain coefficients and said plurality of spectral enhancement gain coefficients; means for applying an inverse frequency domain transform on said plurality of compression-spectral enhancement gain coefficients, wherein a set of time-domain filter coefficients of a compression gain filter result from said inverse frequency domain transform applying means; means for convolving said sequence of delayed samples with said set of time-domain filter coefficients to produce a digital output signal; and an output conversion means adapted to convert said digital output signal to an audio output.

65. A hearing aid for correcting a hearing impairment of a user, comprising: an input signal channel having a microphone and providing digital input signals; an input data buffer, said input data buffer holding at least one block of data comprised of a portion of said digital input signals; a plurality of cascaded all-pass filters, wherein a first block of said digital input signals pass from said input data buffer through said plurality of cascaded all-pass filters, and wherein said plurality of cascaded all-pass filters output a first sequence of delayed samples; means for windowing a first portion of said first sequence of delayed samples, wherein a first windowed sequence of delayed samples results from said windowing means; means for applying a first frequency domain transform on said first windowed sequence of delayed samples, wherein a first warped sequence results from said first frequency domain transform applying means; means for calculating a first plurality of frequency domain level estimates of said first warped sequence; means for calculating a first plurality of spectral enhancement gain coefficients from said first warped sequence; means for windowing a second portion of said first sequence of delayed

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samples, wherein a second windowed sequence of delayed samples results from said windowing means; means for applying a second frequency domain transform on said second windowed sequence of delayed samples, wherein a second warped sequence results from said second frequency domain transform applying means; means for calculating a second plurality of frequency domain level estimates of said second warped sequence; means for calculating a first plurality of spectral enhancement gain coefficients from said first warped sequence; means for summing said first and second plurality of spectral enhancement gain coefficients, wherein a summed first and second plurality of spectral enhancement gain coefficients results from said summing means; means for summing said first and second plurality of frequency domain level estimates, wherein a summed first and second plurality of frequency domain level estimates results from said summing means; means for normalizing said summed first and second plurality of frequency domain level estimates, wherein a normalized first and second plurality of frequency domain level estimates results from said normalizing means; means for calculating a plurality of frequency domain gain coefficients from said normalized first and second plurality of frequency domain level estimates; means for calculating a plurality of compression-spectral enhancement gain coefficients from said plurality of frequency domain gain coefficients and said summed first and second plurality of spectral enhancement gain coefficients; means for applying an inverse frequency domain transform on said plurality of compression-spectral enhancement gain coefficients, wherein a set of time-domain filter coefficients of a compression gain filter result from said inverse frequency domain transform applying means; means for convolving a second sequence of delayed samples with said time-domain filter coefficients, said second sequence of delayed samples produced by a second block of said digital input signals passing

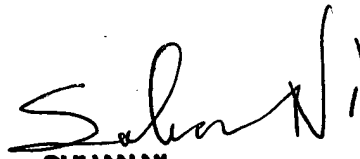
from said input data buffer through said plurality of cascaded all-pass filters, wherein a digital output signal results from said convolving means; and an output conversion means adapted to convert said digital output signal to an audio output.

66. A hearing aid for correcting a hearing impairment of a user, comprising: an input signal channel having a microphone and providing digital input signals; an input data buffer, said input data buffer holding a block of data of size M comprised of a portion of said digital input signals; a plurality of cascaded all-pass filters comprised of $2M$ cascaded all-pass filters, wherein a first block of said digital input signals pass from said input data buffer through said plurality of cascaded all-pass filters to form a first sequence of delayed samples and wherein a second block of said digital input signals pass from said input data buffer through said plurality of cascaded all-pass filters to form a second sequence of delayed samples, and wherein said first sequence of delayed samples and said second sequence of delayed samples form a combined sequence of delayed samples; means for windowing a first portion of said combined sequence of delayed samples, wherein said first portion is of size M , wherein a windowed sequence of delayed samples results from said windowing means; means for applying a $2M$ -point frequency domain transform on said windowed sequence of delayed samples, wherein a warped sequence results from said frequency domain transform applying means; means for calculating a plurality of frequency domain level estimates of said warped sequence; means for calculating a plurality of frequency domain gain coefficients from said plurality of frequency domain level estimates; means for calculating a plurality of spectral enhancement gain coefficients from said warped sequence; means for calculating a plurality of compression-spectral enhancement gain coefficients from said plurality of frequency domain gain coefficients and said plurality of

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spectral enhancement gain coefficients; means for applying an inverse frequency domain transform on said plurality of compression-spectral enhancement gain coefficients, wherein a set of time-domain filter coefficients of a compression gain filter result from said inverse frequency domain transform applying means; means for convolving a second portion of said combined sequence of delayed samples with said set of time-domain filter coefficients, wherein said second portion is of size M, wherein a digital output signal results from said convolving means; and an output conversion means adapted to convert said digital output signal to an audio output.

(End of Examiner's Amendment)



SUHAN NI
PRIMARY EXAMINER